AMENDMENTS TO THE SPECIFICATION

Please replace paragraphs 0037, 0038, 0043, 0044, 0048, 0050-0052 and 0055 of the specification with the following replacement paragraphs:

[0037] A substantial advantage of the invention is that the joining of two pipe ends is possible by means of only one orbit and preferably a single welding process within a short time. The necessity of using a multiplicity of different welding stations operating at a plurality of joining points along the pipeline and welding different weld layers, which has existed to date for economic reasons in the horizontal laying of pipelines under field conditions with MAG orbital welding, is dispensed with since complete joining of two pipe segments is possible by means of a single welding station. The transport of a multiplicity of welding stations and the associated costs are dispensed with. Substantially fewer personnel are required than in the case of the methods known to date. The weld seam quality and the process reliability surpass those of the MAG orbital welding devices known to date. Of course, for further increasing the production speed, it is possible to use a plurality of laser welding heads, which operate on a circumferential joint or are employed in different welding stations. The use of a single high-power fibre laser beam source for a plurality of laser welding heads or a plurality of high-power fibre laser beam sources for one laser welding head is possible. It is also possible to combine the orbital welding device according to the invention with elements of already known orbital welding devices, for example ~~an MSG~~ a gas metal arc welding (GMAW) orbital welding device already known from the prior art.

[0038] In a further development of the invention, ~~an MSG arc welding~~ a GMAW head which in particular can be aligned under motor power relative to the orbital carriage is arranged indirectly or directly on the orbital carriage. ~~An MSG arc welding~~ A GMAW head is to be understood in general as meaning a metal shielding gas welding head, in which an arc burns between a wire electrode, which is guided continuously by means of a wire feed, and the workpiece and is surrounded by a shielding gas blanket. The ~~MSG arc welding~~ GMAW head is mounted on the orbital carriage, either directly or indirectly, for example on the laser welding head, and in particular can be adjusted relative to the orbital carriage in a plurality of directions. It is possible to arrange the ~~MSG arc welding~~ GMAW head in such a way that either the laser beam and the [[MSG]] GMAW arc act together in the laser welding zone or the laser beam and the [[MSG]] GMAW arc act in separate process zones.

[0043] FIG. 4 shows a second embodiment of an orbital welding device comprising an orbital carriage, a laser welding head, an ~~MSG arc welding~~ GMAW head and a transport vehicle in an oblique overview; and

[0044] FIG. 5 shows the orbital carriage with the laser welding head and the ~~MSG arc welding~~ GMAW head in a detailed view parallel to the pipe axis.

[0048] A second embodiment of an orbital welding device is shown in FIG. 4 in an oblique overview of the entire device, and in FIG. 5 in a detailed view parallel to the pipe axis onto the orbital carriage. Below, FIGS. 4 and 5 are described together, only the differences compared with the first embodiment being discussed, and reference is therefore hereby made to the

reference numerals explained above. Instead of the supply of a wire 24 delivered from a wire feed unit 26 via a wire feed line 25 through a wire nozzle 23 and of a process gas passed from a process gas store 22 via a process gas line 21 to a process gas nozzle 20, a metal shielding gas arc welding head 28 known from the prior art is used. The ~~MSG arc welding~~ GMAW head 28 is arranged indirectly on the orbital carriage 7 by mounting it on the laser welding head 12. The ~~MSG arc welding~~ GMAW head 28 can be aligned under motor power relative to the laser welding head 12 and hence relative to the orbital carriage 7 in a plurality of degrees of freedom, as indicated by means of the arrows 54 . For supplying the ~~MSG arc welding~~ GMAW head 28 , a freely programmable [[MSG]] GMAW power source 32, ~~an MSG~~ a GMAW process gas store 33 and an MSG wire feed unit 34 are arranged on the transport vehicle 35 and are connected via [[an MSG]] a GMAW power line 29 , ~~an MSG~~ a GMAW process gas line 30 and ~~an MSG~~ a GMAW wire feed line 31 to the ~~MSG arc welding~~ GMAW head 28 for [[MSG]] GMAW arc formation and for [[MSG]] GMAW process gas supply and for [[MSG]] GMAW wire supply, respectively. The lines 28, 29, 30 are led via the tube bundle 50 to the orbital carriage 7. In addition an earth line 55 connects the first pipe end 1 and second pipe end 2 to the [[MSG]] GMAW power source 32. The MSG arc welding head 28 is oriented in such a way that the laser beam 10 and the [[MSG]] GMAW arc cooperate in the laser welding zone 13. Alternatively, however, it is possible to orient the ~~MSG arc welding~~ GMAW head 28 so that the laser beam 10 and the [[MSG]] GMAW arc act in separate process zones, the laser beam 10 preferably being ahead of the [[MSG]] GMAW arc. Alternatively, it is also possible to orient the laser beam 10 so as to follow the [[MSG]] GMAW arc. By the combination of laser welding with ~~MSG arc welding~~ GMAW, the welding speed can be further increased, the process stability improved, a filler material introduced via the [[MSG]] GMAW wire supply and a lower temperature gradient

achieved, so that the tendency to harden is reduced. Furthermore, a greater gap bridging ability is achieved. The combination of laser welding with ~~MSG arc welding~~ GMAW is particularly advantageous when a significant increase in the welding speed is desirable or the use of larger amounts of filler material is required for metallurgical reasons, for reasons relating to gap filling or because of certain standards.

[0050] The control computer 44 has a first process parameter control 19 which is formed and connected via the control computer 44 to the orbital position sensor 18, the high-power fibre laser beam source 9, the [[MSG]] GMAW power source 32 and the feed device 8 in such a way that laser radiation parameters, [[MSG]] GMAW arc parameters and the speed of advance of the orbital carriage 7 can be automatically adapted as a function of the orbital position α of the orbital carriage 7. It is therefore possible to weld using different welding parameters, for example in the case of a vertical-down weld or vertical-up weld.

[0051] FIG. 5 shows a seam tracking sensor 15 which is mounted on the laser welding head 12 and runs ahead of the already formed or intended laser welding zone defined by the orientation of the laser beam 10, by means of which seam tracking sensor the position of the circumferential joint 3 relative to the intended laser welding zone 13 can be detected. The seam tracking sensor 15 is, for example, in the form of an optical sensor which detects the position of the circumferential joint 3 by means of triangulation. A signal of the seam tracking sensor 15 which is associated with the position is fed to the control computer 44 which is connected to the adjusting means 16. The control computer 44 has a position control 17 which is formed and is connected via the control computer 44 to the seam tracking sensor 15 and the adjusting means 16

in such a way that the orientation of the laser beam 10 and in particular of the ~~MSG arc welding~~ GMAW head 28 can be automatically regulated as a function of the detected position of the circumferential joint 3. Thus, the laser beam 10 is automatically oriented relative to the circumferential joint 3 so that a misalignment of the laser beam 10 and of the [[MSG]] GMAW arc can be avoided even when the guide ring 6 is not mounted exactly parallel to the circumferential joint 3 or the circumferential joint 3 is not straight.

[0052] Furthermore, a process sensor 40 is arranged on the laser welding head 12 so that electromagnetic radiation, in particular thermal radiation, optical radiation or plasma radiation, from the laser welding zone 13 can be detected by means of the process sensor 40. A second process parameter control 41, which is integrated in the control computer 44 is formed and is connected via the control computer to the process sensor 40, the high-power fibre laser beam source 9, the [[MSG]] GMAW power source 32, the feed device 8 and the adjusting means 16 in such a way that laser radiation parameters, [[MSG]] GMAW arc parameters, the speed of advance of the orbital carriage 7 and the orientation of the laser beam 10 can be automatically adapted as a function of the detected radiation.

[0055] A third process parameter control 43 likewise integrated in the control computer 44 is formed and is connected via the control computer 44 to the image processing means 42, the high-power fibre laser beam source 9, the [[MSG]] GMAW power source 32, the feed device 8 and the adjusting means 16 in such a way that laser radiation parameters, [[MSG]] GMAW arc parameters, the speed of advance of the orbital carriage 7 and the orientation of the laser beam 10 can be automatically adapted as a function of the evaluation signal. Insufficient quality of the

weld seam 4 or weld seam defects can be counteracted automatically by means of this control by adaptation of process parameters.